

THE
FOUR APOSTLES OF SURGERY:

AN HISTORICAL SKETCH.

BEING

THE ADDRESS

DELIVERED AT THE ANNUAL MEETING (JUNE 26) OF

The Glasgow and West of Scotland Branch of the
British Medical Association,

BY

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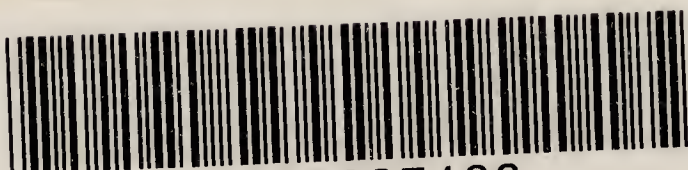
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ADDRESS.

GENTLEMEN,—My first duty, on taking this chair, is to acknowledge the honour you have done me in selecting me as your President. I need not say how much I appreciate this mark of your confidence, especially as this is but the second occasion on which you have exercised your right of choice. I regard your kindness the more highly, as I succeed a man so respected and honoured as Professor Allen Thomson. Having, first as a student and latterly as a colleague, come much into contact with Dr. Thomson, I can the more thoroughly value his commanding talents and high character, and I am sure you will heartily endorse the wish which I express that, in that retirement which, after his long career of distinguished usefulness, he is about to seek, he may enjoy for many years to come the affectionate regard of his large circle of friends. In electing him as our first President, we conferred on him the highest honour we had to bestow, and indicated to the British Association where they could find a worthy chairman. They have taken the hint, and, in choosing him, they have honoured our city and our Association.

Gentlemen, during the past year—the first of our individual existence as a Branch of the Medical Association—we have been almost wholly occupied in organising and consolidating our Society, and it is most gratifying to think that, mainly by the efforts of our energetic secretary, we, the youngest scion, are already

the tenth most numerous branch of the thirty-two which constitute the parent Association. I have every confidence that another year's operations will advance our position both in numbers and influence.

Gentlemen, it is my duty to address you on some subject of general interest; and, in the choice of a topic, I have been mainly guided by the desire to occupy some ground a little beyond the usual range of such undertakings, and to dwell on a subject which had especially occupied my own attention. I thought you might not be unwilling to pass for a short time beyond the horizon of every-day questions and renew your recollections of the larger field beyond; for I take it to be a good thing now and again to get out of the narrow valley in which all of us are daily labouring, and from a mountain-top, as it were, to look back on the long and rugged path by which our profession has advanced. Every soldier in such a great battle as that in which we are individually bearing a humble part gains much by an occasional survey of the whole field, so that, by securing a comprehension of the general plan, and the various positions occupied, he may the better be able to direct his personal efforts. I have determined, in the time at my disposal, to try and draw your attention, in a rapid sketch, to the chief influences or forces which have moulded our science, and to the history and place of those men who, by their genius and labours, have most powerfully aided its development. If I confine my remarks to that branch of medicine with which my own life has been chiefly occupied, it will be because I am most familiar with its history, and not from any belief that a broad distinction can or should be drawn between medicine and surgery properly so-called. Surgery is, I hold, medicine and something more. It is medicine with an additional arm.

That medicine, speaking generally, is a science of the greatest and most momentous consequence will be readily conceded by this assembly. That it is perhaps the oldest of all studies may be assumed; that, not-

withstanding all the labour which has been bestowed upon its cultivation in times past, it has not yet reached perfection or acquired the position of one of the exact sciences, is simply due to its subject—matter and mind—both unstable, both ever varying, both complex and mysterious in their combination and reactions, both ever subject to endless influences from within and from without. It is, no doubt, from a want of due appreciation of this difficulty that even thoughtful men have cast discredit on medicine as a science, and that the great Lord Bacon used the phrase so often quoted that its labour had “been more in a circle than in progression;” for he adds: “I find much iteration but small addition.”

It is necessary to survey a large part of the road which medicine has travelled, and not to confine our review to a limited period, in order to understand aright the real progress which has been made, and to see that, with all the halting and turning aside, and even occasional retrogression, which have marked epochs of the history of our science, still there has been in truth a grand advance along the whole line. I have always thought that a careful study of medical history should form a portion of our professional training, so that men would know what had been done in the past, and avoid that painful “iteration” of which Bacon speaks, and thus, too, be better prepared to prosecute original research. Such knowledge would greatly diminish our professional discoveries and our literature. “Nescire quid antea quàm natus sis acciderit, id est semper esse puerum” is as true of medicine as of history.

Every great epoch in the history of medicine has been signalised by the advent of a man of genius who has been the personification or summing-up of the spirit and doctrines which had been gradually growing, and to which he gave expression and embodiment; and, in most cases, the characteristic of such eras has been chiefly due to the influence exercised by such men.

Hippocrates, Galen, Ambroise Paré, and John Hunter were each the summation of centuries of work. They systematised and consolidated it so as to supply a new starting-point to the science they adorned; they brought to full maturity the fruit which had for long periods before their respective epochs been slowly ripening. It is my desire to explain and illustrate this thesis.

Little or nothing is known regarding medicine before the birth of Hippocrates, *i.e.*, B.C. 450. It is true, that we have reason to suppose that, in India and China, a large amount of medical knowledge existed; and we know that the ancient Egyptians attained to a certain eminence in the art; but it was in the free and enlightened land of Greece—a country which, with its freshness and vigour, was then the perfect Eden of human intelligence—that medicine really took root and flourished. There, as in all primitive nations, medicine was intimately associated with, and subservient to, the religious rites, and the priests became its chief expounders. Long after Greece had lost her independence, the most celebrated physicians of the age were sons of her soil. In the gymnasias, where every art which could conduce to mental or, above all, to that bodily vigour and perfection which the Greeks so much admired was studied and practised, medicine naturally was much prized, and some of the most distinguished practitioners of the time—Galen among the rest—were surgeons to these establishments. There were two classes of practitioners in these institutions: the higher, called *Gymnastici*, attended to the numerous injuries which occurred; while an inferior set, termed *Aliptæ*, took charge of the frictions and lubrications so much employed, and which in time came to supplant as remedies all other appliances, and constituted the “*Iatroliptic*” medicine of later times. Diet and exercise formed a very important part of the remedies used by the ancient Greek

physicians, and much space is given to the consideration, in their writings, of such therapeutics. In our own time, the fashionable hydropathic establishments are perhaps, on the whole, the nearest modern representatives of the gymnasia.

In the Greek schools of philosophy again, where intellectual exercises sharpened the wits and expanded the mind, medicine was a favourite theme. In truth, medicine was then considered a branch of philosophy, and Aristotle expresses their close relationship when he says: "The philosopher should end in medicine and the physician commence with philosophy."

Finally, in the poetic and fervid mythology of Greece, which embraced almost every object and force in Nature, and in which the Gods were no longer the cold passive abstractions of the East, but the active, warm, and living personifications of perfect humanity, medicine was represented. Æsculapius was to the Greeks the type of the healing power of Nature. Sprung from the great sun-god Apollo, who daily spread a mantle of light and beauty over their happy land, they gave to him for offspring Hygieia and Panacea, and reared grand temples (Asclepions) in their honour. These temples continued to be the centres of the study and the practice of medicine down to the Christian era, and till the oracles were rendered mute by the spread of the new faith.

It was my good fortune, many years ago, to visit most of the more celebrated of the Asclepions, and the impression I received from their ruins will never be effaced. I well remember my first glimpse of Cos when, after sailing for several days amidst the splendours of the Ægean, past Patmos, with its sacred memories of the aged apostle of the Apocalypse, and Samos, where Pythagoras was born, and close by many headlands and bays covered with the remains of places "famed in story," we at last anchored before the ruins of the great temple so long the leading medical school of antiquity, and the place where the venerable father

of our science was born. The famous fountain, still called by the name of Hippocrates, is nearly all that remains of that once celebrated place. The groves and pillared porticoes have long disappeared, and tangled weeds cover the prostrate fane. A short distance off, on a sunny slope, lay the rival temple of Cnidos, from which emanated the earliest medical writings, *The Cnidean Sentences*, while the renowned Halicarnassus was but a short way removed. It was in such lovely situations that the Greeks placed their great hospitals. They stood on high windy promontories, looking forth on a grand expanse of summer sea, like Cnidos and Cyrene; or sheltered in deep bays and surrounded by groves of fragrant orange and citron, like Cos, Smyrna, and Corinth; or secluded in wooded mountain-girt valleys, like Epidaurus and Pergamus, and Tricca and Tithorea. Everything which beautiful scenery and health-giving pure air could accomplish in restoring the sick was provided. Within the sacred enclosure, no dying person could enter, nor parturient woman remain. A theatre, stadium, baths, medicinal waters, works of that divine "art" which was born in Greece, and music, which in these institutions was specially cultivated, were all supplied, in order to divest the mind of its sorrows, and give it confidence and hope. Within the dim and silent temple the solemn figure of the god sat enthroned. He held a staff in one hand and with the other rested on a serpent, which was the type of prudence and renovation, and which still continues the cherished emblem of our art. A dog, to represent fidelity and honesty lay at his feet, and a cock, to indicate vigilance, was close by. The serpent was of a peculiar species alone found at Epidaurus, and it was kept alive in the temple. It was one of those that, in later times, the Romans, when in straits from epidemic disease, borrowed in order to secure the protection of the Greek god of healing.

The sick who came to consult the god, having been purified and anointed, passed the night within the

temple lying on the fleece of the ram they had sacrificed, and, in dreams or in solemn accents, they received instructions as to their ailments. The deceptions practised by the priests have been well satirised by Aristophanes and Aristides. The officials having alone the right of interpretation, and being far from ignorant, knew well how to give a fitting turn to the dream or other communication. A record was made on tablets of brass or stone of the cases treated and the remedies used, and thus in time a vast number of crude observations were accumulated. Surgical instruments and medicinal drugs being also shown in these temples, and operations performed, it is easy to understand how these establishments became in time medical schools.

Such was the position of affairs when, amidst the sacred mysteries of the temple at Cos, Hippocrates was born. His father being a priest, he was from childhood initiated into the learning and practice of the place. He in time ministered, as his forefathers had done, at the altar ; but, applying his great genius and remarkable discernment to unravel the confused records of the temple, he generalised the information there hid, checking the teaching, no doubt, by his own personal observation and experience, and analysing and setting forth the principles which were involved till he produced those remarkable writings which are the foundations of our professional literature, and which, while they were the undisputed dogmas of medicine for many centuries, are still quoted with respectful regard. By him was laid in simple truth the foundations of that great temple of medical science of which we here to-day are humble students.

As in various other great epochs of the world's history, remarkable galaxies of men of genius have appeared contemporaneously or in close succession, so with Hippocrates came a great company of men eminent in many departments of human activity. In history, eloquence, poetry, philosophy, and art, work was done which the world still despairs to equal.

Pericles the statesman, Socrates, Plato, Xenophon, Democritus, Herodotus, Thucydides, Sophocles, Æschylus, Aristophanes, Euripides, gave to philosophy, history, and poetry a foremost place; while Phidias and Praxiteles, Scopas and Polycletus, gave life to marble, so that it was said to breathe. In painting, too, Apelles, a fellow-townsmen with Hippocrates, together with Zeuxis and Parrhasius, gave on canvas that warmth and beauty to the human figure which the marble denied. The world has never witnessed such an extraordinary coruscation of intellectual glory, within so limited a period and in so small a country. Not the least eminent of these divine workers and thinkers was "the old sage of Cos." Doubtless, there has been ascribed to him much insight into disease which, perhaps, he never possessed; but still his labours were many, and the fruit abundant. If his successors called him "divine," and Galen revered his writings as the voice of the Deity, it is no wonder that for two thousand years he should have ruled in the schools, and that his authoritative voice should still reach us. To our wider knowledge, much that he believed seems full of error, and even in some parts ridiculous; but, read by the light of his time, it is marvellous what glimpses he had of truth. He pursued medicine in the true spirit of the Baconian philosophy, relying on observation and experience as his guides. His descriptions of disease have ever been quoted as the perfection of terseness and of truth, while his well-known aphorisms have passed into every language. Where do men not repeat the solemn, almost desponding, opening phrase: "Life is short and art is long, the occasion fleeting, experience fallacious, and judgment difficult"?

Hippocrates specially studied that natural history of disease to which men in modern times attentively turn for guidance, and his great aim was to derive from such study a rational prognosis. He had great trust in the recuperative powers of the body, which he

connected with those universally diffused forces of "Nature," which he saw tended, if undisturbed, to restore and repair. His "*vis medicatrix*" was the "*anima mundi*" of Pythagoras, and his great "physician of diseases." Not under the dominion of superstition, like many of his contemporaries, he avoided (as Hunter did) all foolish hypotheses and adhered to facts. In his remarks on diet and climate, he is particularly happy; and he did not consider it derogatory to give advice to his disciples even as to how to wear or dispose their robes, so as gracefully as well as effectually to do their duty.

It would be wholly beyond my purpose to dwell at present on the doctrines and teaching of Hippocrates; but I may remark that his views on the primitive elements (fire, air, water, and earth), and on the humours (black and yellow bile, blood, and phlegm), which so pervade his writings, together with his opinions on critical days and on that prognosis derived therefrom, which the Greek physicians looked on as the "crowning department of medical science," gave a complexion to the doctrines of the medical schools of which traces still continue in our phraseology, if not in our belief. On fractures and dislocations, and on many operations and instruments, he wrote most ably; and anticipated, as regards "immovable" apparatus and the treatment of club-foot without cutting the tendons, some practical points which have been ascribed erroneously to recent times. I would quote from the sayings of Hippocrates one sentiment before passing on. "Do not seek," he says to his followers, "either pomp or riches; heal gratuitously with the sole desire to secure esteem and gratitude. When you can, aid the poor man and the stranger, and, if you love mankind, you will love your art. If you are consulted about an affection, do not use long words, neither employ a studied or inflated discourse; for nothing more truly indicates incapacity as to imitate the empty buzzing of the hornet. In those diseases which allow

of a choice of remedies, the instructed man will employ the simplest and most convenient as being the least liable to lead to error." Such sentiments are worthy of repetition in all times. The oath he administered to his pupils, too, breathes the same high unselfish spirit: "With purity and holiness I will pass my life and practice my art." This he himself did, and hence his unsullied reputation, and the veneration in which men held his name.

After the death of Hippocrates, came the reign of the philosophers who, disdaining the patient method pursued by him, thought to learn the science and practice of medicine by disputations and foolish speculations on theoretical questions. The temple practice was no longer a mystery, but known to a large circle, and medicine might have made a true advance if it had only been cultivated in a proper spirit. The Greek of that day sought knowledge in the discussions of the market-place; but a comprehension of physic was not thus to be acquired. The various "sects" by which medicine was so long distracted thus arose. Rationalists or Dogmatists contended with Empirics and Methodists; Pneumatics, Gymnastics, and Eclectics had each their special shibboleth; and broke to atoms the concrete science which the labours of Hippocrates had welded. It would not be difficult to show that in our own day, without perhaps so distinct a classification, there are representatives of all these schools; and we all know that many of the terms and phrases we every day use took their origin from the doctrines of these disputers. Medical science was not advanced by their debates. In their dealings with medicine there was much activity, but almost no progress. Certain it is that the intellect was sharpened and acumen increased, but of substantial fruit the ingathering was small. Amidst this strife of tongues appeared a polished "litterateur" and undoubted gentleman—"the Cicero of Medicine"—Celsus. He must have been a man of remarkable application, as well as talent,

if all the works on so many and such discordant subjects as have been ascribed to him emanated from his pen. The precise time and place of his birth and of his death are equally unknown, so that critics have doubted his personality altogether, and thought that "Celsus" was a mere *nom de plume* used by many authors. There is much, however, in his descriptions which belies this, as the style, together with the vividness and the expressions, would imply the work of one man, and he a practical and experienced physician. I doubt not some here have, like myself, seen in the Museum at Naples many examples of surgical instruments exhumed from the buried cities, which not only illustrate in every particular his descriptions of them, but anticipate completely the shape and construction of some of our most useful modern inventions. Celsus describes, among many other operations, the autoplasmic operation by sliding, commonly designated "the French;" and the opening up of the cavity of the nose, to apply remedies in ozæna, has come to the front within the last few weeks. "Infibulation," too, which he recommends to insure continence in both sexes, has, I understand, been re-invented and used for curing masturbation. Nothing can excel the description of "lithotomy on the gripe" given by Celsus (hence termed "Lithotomia Celsiana"). That method clearly prepared the way for Dupuytren's bilateral operation. Unquestionably, he used the ligature, though he speaks of applying it to "veins," which in his anatomy was not synonymous with the same word now. He tied both varicose veins and piles as in our own day; and he applied a ligature to vessels in recent wounds, tying them in two places and dividing the artery between. In his dissertations on hernia, ranula, suppression of urine, poisoned wounds, diseases of the eye and testes, he has foreshadowed not a few modern views. But my time will not allow of any further remarks on a writer who was, at least, a most able encyclopædist, and gave an accurate account of the

state of medical knowledge at the beginning of the Christian era. No work on medicine has been oftener re-edited or more esteemed than his *De Re Medicâ*.

For four centuries after Hippocrates, the sects ruled the medical world. Their teaching was summed up and closed by Galen, who lived in the second century. He it was who bound up the divisions, and restored our science—one and indivisible—to its proper dignity.

Let me here, however, for a moment pause to allude to a great school which, under the enlightened Ptolemies, did good work at Alexandria for nearly three centuries before Christ. Human anatomy was there born, and learned men came from the most distant parts to gaze on the human skeleton. Though the writings of Erasistratus and Herophilus have perished, their works remain in their discoveries and the example they showed. The division of nerves into motory and sensory was then made, and Cassius speaks of the decussation of those of the cranium, and explains thereby the seat of paralysis on the side opposite the lesion. Physiology, chemistry, botany, clinical medicine, and operative surgery were cultivated in the medical department of that great Museum which, supported by the State, was devoted to the liberal arts. There Euclid, Theocritus, Callimachus, Ammonius, and Dioscorides taught, and the catheter and lithotrite were invented. When the Romans, B.C. 30, added Egypt to their other conquests, and led all arts and sciences captive to the City of the Seven Hills, they found in the temples, porticos, library, gymnasia, and hippodrome of Alexandria much which excited their wonder and admiration.

Rome continued the mistress of the world till the end of the fifth century, and drew to herself the learning and the wealth of the nations; and if, in these later times and within this then insignificant island of the western sea, there has arisen a greater and further-reaching seat of empire than Rome could boast, there has certainly never elsewhere in the

world's history been any centre to which the products, both mental and material, of the known earth were drawn as they then were to Rome. Galen flourished at the zenith of that remarkable period. Already the leaven of the Christian faith had begun to stir the whole polluted mass of the pagan world, and cause, as is usual from the seething of such antagonistic influences, a disturbing, if not calamitous, effect. The old order changed, yielding place to new ; for God had fulfilled himself in a new way on the earth, and given an aim and object to human effort. Before Christ taught, the world was "like a vast body without a soul." True, the human conscience had never been without a witness ; but men had sought vainly to discover the unknown God whom they were blindly prompted from within to serve. They sought Him in every natural object and phenomenon. Sun, moon, and stars, dawn and sunset, the blue sky overhead, and the oceans, rivers, and mountains, the trees and winds, the summer flowers and autumn fruits, the winter's frost and the whisper of spring in the woods, were clothed by them with sentient existence and received divine honours. Human heroes and abstract principles, and even vices and diseases, were included in their long list of deities ; but with all that "the world by wisdom knew not God." The philosophers had tried to discover the mystery of life in the universe, but were only perplexed by what seemed an inexplicable whirl of mind and matter coming from the unknown and passing on into darkness. Burdened with a feeling of hopeless impotence, they tried in vain to arrange the chaos ; but they held no key to the enigma, no thread to guide them in the labyrinth. Christ alone could bridge over the gulf which divided humanity from God, and reconcile all contradictions, while he quenched with living water man's thirst for a knowledge of the infinite. He showed what high reverence was due to the human body as "the temple of the living God," and he

sanctified the healing art by his own acts and example. He came bearing a message from the invisible God to the mind and spirit of man, and substituted the religion of conscience and morality for that of mere nature and sense. In the earlier Christian ages, however, the effect of this great revolution on the whole field wherein its action was felt was in some sense disastrous; and medicine, following, as it necessarily did, the varying phases of intellectual activity, suffered proportionately. The miracles of the early church, putting aside as they did the ordinary laws of nature, gave rise to confusion rather than order in men's minds. Fantastic and incongruous developments of the new faith prevailed. The Gnostics, Cabalists, and Mystics of the early church exercised for centuries a pernicious influence. Amulets, charms, incantations, talismans, and many other superstitious and mischievous inventions, took the place of remedial agents. Many of the talismans were, as is well known, exquisite works of art; but not a few were most repulsive in their nature. The cure in any case was ascribed to them, and not to the drug or surgical appliance they accompanied. All the absurdities of astrology and magic were in full force, and decided the selection of remedies. Such choice, too, was sometimes founded on dreams, or in some supposed resemblance in shape or colour to the affected part or the leading sign of the disease. They were heating or cooling, drying or moistening, in their effects. More ridiculous still was the idea that by arithmetical or musical combinations could their efficacy be determined. The most complex prescriptions, too, were employed. The celebrated theriacum, so much sought after and valued, contained no fewer than sixty-six most heterogeneous and discordant ingredients. Such superstitious and unreasoning practice was not, be it remembered, confined to the ignorant laity, but controlled the proceedings of the most celebrated physicians. As late as the

fifteenth century, cancer was treated in Italy by the excrement of young men fed on fresh-water crabs dried and powdered; and Carpe's celebrated human cerate for wounds, which he only divulged because he had been divinely commanded to do so, was composed of the scrapings of the head of a mummy digested in female milk.

On the other hand, Christianity gave us hospitals and other charitable institutions, from the new view which it inculcated of man's duty to his fellows. These hospitals replaced the Asclepions, and attracted the services of the most noble matrons of the time. They were for the most part attached to religious houses, and were served by an order of priesthood named "Nosocomi," while the "Parabolani" were lay brothers.

But to return from this long digression: Galen was born at Pergamus and studied at Smyrna and Alexandria, afterwards serving as gymnasarch in his native city, and finally settling as a teacher of anatomy and surgery in Rome. Very numerous treatises were ascribed to him, on medicine and other subjects. His *Ars Medica*, which was the text-book of the schools for fifteen hundred years, gave a complete epitome of the medical knowledge of his day and of his own large experience, while his *Methodus Medendi*, written in his old age, was a summary of his latest views. Galen brought medicine back again to the true path, and pointed out to his successors the right road to advance. While Rome was growing in power, but scanty place was found for our craft. Slaves and freedmen alone practised, and the designation "physician" was a reproach. In the time of the later emperors, however, medicine had acquired a high place in the social scale. The heads of the profession were assigned a place and emoluments which have never been approached in any age or country. They ranked with the highest dignitaries, and received an annual state maintenance which has been reckoned

as equal to £10,000. Medical education, too, both practical and theoretical, was carefully supervised, and licences to practice were given by examination. The preliminary training was in some respects of a high order, and the professional part occupied five years. The whole social life of the students was carefully looked after, and they were kept in strict discipline. Midwifery was almost wholly in the hands of females, and medicine and surgery knew no divorce.

Galen was a theist, and, in the celebrated passage denouncing those who would place the supreme good in their own will, he expresses his faith in these noble words: "I hold true piety to consist not in sacrificing to him hecatombs of bulls or burning incense of cassia, or of hundreds of fragrant ointments in his honour, but rather in ascertaining for myself and in teaching to others something of his wisdom, his goodness, and his power."

From the time of Galen to the thirteenth century, we encounter no names of renown. They were all mere commentators bowing down servilely to the authority of Hippocrates and Galen, the then only two pillars of the medical edifice. Cælius Aurelianus, Antyllus, Heliodorus, Pliny the Elder, Aretæus, Paulus Ægineta, Alexander of Tralles, Aëtius, and Oribasius (he who found the Delphian oracle mute) were writers of note but of little originality.

At the end of the fifth century, worn out by sensuality and internal disintegration more than by age, paralysed by internal dissensions and the weakness of satiety, the Roman empire received her *coup de grace* from the vigorous Northmen. Degenerated and contemptible as Rome latterly became, still what there was of science dwelt within her walls, and was well-nigh extinguished as she was overthrown. In her colonies, especially at Alexandria, some life still remained. Though the great heart was still, the limbs quivered. "The Dark Ages," however, descended like a pall when the mistress of the world disappeared, and

continued till the thirteenth century. What knowledge existed was alone found among the Arabs or Saracens, who secured the Greek authors in their conquests, and translated them into their own language. They deserve our gratitude for thus preserving the ancient literature and keeping alight the sacred fire. Their writers—Rhazes, Geber, Avicenna, Avenzoar, Serapion, Haly-Abbas, Averroes, and, before all as regards surgery, Albucasis—were at best copyists, commentators, and occasionally mutilators of the Greek authors, and did almost nothing for the advancement of medicine—"when the Greek ceased to communicate the Saracen ceased to advance" either in philosophy or medicine.

Albucasis used the immovable apparatus in fractures, and did most things with that cautery which we now again so much, but more legitimately, employ. The Arabs introduced senna and rhubarb as purgatives in place of hellebore, and they also first used musk, carbonate of soda and potash, the mineral acids, alum, corrosive sublimate, etc. The great popularity enjoyed for long by the Jews as physicians arose from their knowledge of Arabic, and hence of the Greek fathers.

Bagdad and the Saracen kingdom fell before the Turks in the thirteenth century, and we have to turn elsewhere for the centre of the learning of the time. That men, even in that dark and unfavourable period, parched for knowledge is well proved by the extraordinary enthusiasm with which some sought for it. Constantine, a native of Carthage, as the story is told, in the eleventh century made the long and arduous journey to the Euphrates valley and further India, seeking from every source for medical information. After the sore travel of forty years he was rejected as a sorcerer by his native city and cast out. Salernum received him, and in return he bestowed on her those treasures which he had acquired, re-translating into Greek the Arabian classics. Thus arose the first, and for long the most renowned, medical school in Europe, a school

to which the returning Crusaders were wont to add their hard-earned experience. At Salernum, degrees in medicine were first bestowed, and the custom of the temples of crowning the student at the end of his curriculum with laurel was afterwards changed into the use of a cap, a practice which is followed, as you all know, in our own universities.

The early physicians had, in some respects, an advantage over our modern practitioners, as we find they took an oath to receive no fee from a poor man, and to take no part of the profit derived from the sale of drugs. Would it were so still !

As learning slowly awoke, the great universities became established. Bologna led in the twelfth century, and afterwards those of Italy, France, Spain, Great Britain, and Germany followed, for the most part, in rapid succession. Students crowded to learn, so that in some of the university towns the gownsmen exceeded in number the other inhabitants. Roger Bacon and Lanfranc, during the thirteenth century, did much for medicine in England and France.

The Church again associated itself closely with medicine. During the middle ages, the physicians were nearly all in holy orders. Popes and councils could not divorce the unnatural compact nor altogether hinder the priests from shedding blood. It was, however, in order to secure the services of laymen to bleed and do the lesser operations of surgery that the physicians introduced the barbers into the citadel—a traitorous step which exacted a heavy penalty. The short razor which the barbers used both in their special craft and in surgical operations is represented by the straight bistoury which we all employ. In every country in Europe, they acted as a disturbing force in the upheaval of surgery ; but, in France, during the fifteenth and sixteenth centuries, they occasioned most annoyance. There many a fierce fight, not with words alone, but also with enraged hands and lethal weapons, took place between the surgeons of the long and short

robe, as they were respectively called, and much discredit and scandal to surgery were thereby occasioned. I am not aware when the connection between the barbers and surgeons was dissolved in France, but in England it occurred in 1745, and in Scotland in 1722, while it subsisted in Spain up to 1863. I may say in passing that apothecaries and grocers were incorporated in England by James I., and pastrycooks had the sole right to sell drugs at one time in France and Germany, as the surgeons in Scotland had to vend "*aqua vitæ*."

One section of the barber-surgeons in France were called "cutters" or operators, and they alone undertook such operations as lithotomy, herniotomy, and the removal of cataract. Fractures and dislocations were assigned to a special sub-class. These cutters were as a body rough, ready, and somewhat reckless. They were a sort of surgical bagmen, who travelled about seeking employment. They carried various antidotes and appliances in their wallet, and were glad to engage themselves by the job, or for a certain period, to any individual or corporation who agreed to pay them. From them came the brass basin and striped pole which still often marks the shop of the barber. The colours on the pole, and also those red and blue bottles which distinguish the apothecaries' windows, were suggested by the colour of the blood, and the white stripe on the pole represented the bandage. From the ranks of this illiterate and almost degraded class, however, sprang some of the most distinguished men of the time—Frère Jacques and Frère Côme, Franco, and, before all, Ambroise Paré, were barber-surgeons and "cutters." Up to very recent times, the learning of the profession (which chiefly consisted in being able to read bad Latin and write worse) was credited to the physicians, and to them belonged the duty of teaching anatomy to the surgeons. I understand that the charter of the Royal College of Physicians of London gives to the Fellows of that learned body the right to perform surgical operations.

Just before the sixteenth century surgery had reached the lowest depths. The priesthood had so shackled its limbs that it was powerless to advance. All the professors of medicine in the Italian universities were in orders, and priests alone were eligible for degrees. Nay, more; the possession of the tonsure was requisite to the mere study of medicine in many of the great schools. Some of the most celebrated physicians of the time held high Church preferments, and thus theology and medicine were so conjoined as to lead to endless difficulties in the progress of both departments of knowledge.

In the charter of the College of St. Côme, secured by Pitard's influence in the fifteenth century, it is expressly stated that the practice of surgery had fallen into the hands of "murderers, thieves, coiners, spies, deceivers, and usurers;" and, in Germany, an artisan would not take an apprentice who was related to a barber, bathman, or butcher.

In the enormous flood of evil which has flowed in on the profession during past ages from empirics and charlatans, it would be wonderful if no grain of good had occasionally been cast up. It cannot be denied that, at long intervals, real improvements and discoveries have been made by irregular practitioners. Thus it was that plastic surgery was advanced during the fifteenth century in Italy by the Brancas (father and son), who performed with wonderful address those remarkable operations which, being described during the following century by Taliacotius of Bologna, often go by his name. The Norsini, too, for several generations, were distinguished for their success in lithotomy and in radically curing hernia. This last named operation appears to have attracted much attention during these times, and such atrocious expedients as sewing the testicle into the canal, excising that gland and the cord, laying open the sac, and applying the cautery, were among the measures employed.

In the fourteenth century, and long afterwards,

Montpellier was the leading school of medicine, and that partly because of the fostering care of the Popes while resident at Avignon, and perhaps mainly from the rich store of Arabian manuscripts the university had acquired, and which in these days, before printing was invented, was in itself a sufficient claim to distinction. It was here that the celebrated Guy de Chauliac taught. For two hundred years, his *Chirurgia Magna* was the text-book of the schools, and contained many important practical lessons. He used metallic sutures, united tendons as we are again beginning to do, compressed exuberant granulations by metallic plates, and cut subcutaneously various structures. His book is, however, far from being free from the ridiculous superstitions of the time in which he lived. He tells us that, when he studied under Mundinus at Bologna (he who first systematically taught human anatomy), the whole subject was comprised in four demonstrations. In one was explained the nutritive organs, in another the spiritual, in a third the animal, and, lastly, the extremities.

I must pass over the names of many men of some mark, in both general and special surgery, who taught in Italy during the period of which I have been speaking, and my time will not allow of any reference to the institution, at that time, of examinations on entering the profession in France; but I must allude to the uprise of surgery in England, where now it began to make some head. The close connection which then existed between France and England caused English surgeons to study at the then celebrated French schools; and thus it came about that John of Gaddesden, John of Ardern, and our own Peter Lowe, received their professional instruction in France. The first two lived in the fourteenth and the last in the sixteenth century. From that date till Woodall, at the beginning, and Wiseman, at the end of the seventeenth century, appeared, there was no surgeon of any note in England. Wiseman was evidently both an able and polished

man, but, like the rest, he believed in the royal touch, used red-hot knives to amputate limbs, and the cautery to arrest bleeding.

Interspersed through the writings of various authors, in the fifteenth and sixteenth centuries, are some curious illustrations of the truth of the Preacher's lamentation : "Is there anything whereof it may be said, See, this is new." John de Vigo dressed his stumps with cotton, as Guerin is now advocating. Carpi used mercurial inunction, as Sigmund has strongly recommended. Paracelsus subcutaneously divided varicose veins, and tried to close them by the cautery. Arculanus ligatured the veins at two points in varicocele, and removed a portion of the vessels between. He also treated stricture of the urethra by bougies and by external urethrotomy. Sponge was administered in goître. Paré, during the later part of his career, treated wounds with alcohol to render them non-absorbent, as the French surgeons have again been doing these last few years. Montagnard recommended the head and shoulders of the patient to be lowered when the taxis was employed. Allarton's median operation is just the old Marian, with better means of dilating the wound ; while, as regards acupressure, Archigenes of Apamea, as far back as the first century, put a needle below the blood-vessel and fixed it to the flesh—a plan revived by Guillemeau in the sixteenth century, and in our own day by the lamented Sir James Simpson.

Before the period usually described as the revival of letters, the ancient Greek and Latin authors were discovered in various quarters, and had come to be studied in their original language. The works of Celsus appeared before those of Hippocrates and Galen, and they gave a great impulse to medical education. The long dawn at last culminated in the full brilliancy of the sixteenth century. To this rehabilitation of the literary world, it is generally admitted that three chief forces contributed. The discovery of printing, before all ; the reformation of religion, by which the rights of

private judgment and criticism were secured ; and the grand enterprise of Columbus confirmed the revival which, since the beginning of the thirteenth century, had been slowly advancing. The compass allowed of long voyages, though it brought the penalty of a new disease. Men travelled farther, and acquired greater information. The folly of the schoolmen was patent to many, and the views of the Church on science were seen to be in many essential points erroneous. A crisis came in the mental world, and a deeply pervading fermentation resulted. In medicine, many active agencies were at work. The great universities and schools had begun to influence men. Pathological anatomy was established. Many new diseases—several of them epidemic, others of a most striking nature—appeared. Syphilis was, for the first time, recognised as a widely diffused and Protean malady. Gun-shot wounds caused dismay, but stirred observation and ingenuity.

Germany, where almost no man of repute in surgery, except Gerssdorff and Würtz, had appeared, gave birth to a most eccentric genius in Paracelsus, whose example and writings did enormous service in exploding that blind and disastrous reliance on authority, which was then universal. He was no mean empiric, though, in his drunken humours, he gave forth much that was foolish and untenable. He was, in truth, the most erudite and original man of his time, and his views on medicine gave subject for thought and discussion in every university in Europe for a century after his miserable death in a poor's house. He died at forty-eight, notwithstanding his infallible elixir. I have stood beside his grave in the cemetery of St. Sebastian at Salzburg ; and there learned that, during the great cholera epidemic, the ignorant peasants crowded round his tomb to pray for succour, though his ashes had lain there for four hundred years, so great was the tradition of his skill. He it was who originated the maxim of Hahnemann : "*Similia similibus curantur*," and in-

augurated that chemical treatment of disease which, in the hands of Van Helmont and others, became subsequently famous. Amidst his inebriate ravings, he gave out many scintillations of wisdom and genius, and is said to have foreshadowed not a few of Hunter's discoveries.

In the sixteenth century, responsive to the call of an awakening intelligence and advancing knowledge, came the third great apostle of surgery, Ambroise Paré. The long shadows of the dark ages were nearly withdrawn. The authority and tyranny of the Church were broken ; the true value of the ancient writers was more accurately understood ; and many of the various medical corporations had been established, not only abroad, but in our own land. Born of poor parents, forced upward by no influence but that of his own genius and enterprise, Paré made, at nineteen, his first great discovery, when he accidentally found how injurious it was to employ the cautery and boiling oil in gun-shot wounds. The story of how this came about is too well known to require recital. He had the intelligence to comprehend the full import of the observation, and to work it out into new principles, which have been since the means of preventing much misery and saving innumerable lives. The old leaven of superstition, however, crops out in his use of the celebrated "oil of whelps," to concoct which live puppy dogs were immersed in boiling oil, and added to an infusion of earth-worms in white wine, and which he substituted for the cautery. This he finally abandoned for alcohol, having turpentine and aromatics mixed with it, and this he used as an antiseptic during a terrible outbreak of hospital gangrene. His crowning discovery was, of course, the ligature in amputation, and so obviating the horrors of that ghastly plunge of the quivering flesh into boiling liquids, or the slow agony of the copperas button. These terrible cruelties unfortunately survived Paré's denunciations, and were in use for long after his time. It is obvious, from

Paré's statement, that he was ignorant at the time he used the ligature in amputation that Celsus spoke of it at all, and that it was from meditating upon its use in recent wounds that he determined to employ it in amputation. He attributes the idea to the special inspiration of heaven, "for the good of mankind and the honour of surgery." He drew out the mouth of the bleeding vessel with forceps, and tied it in the first instance, and, if bleeding recurred, he passed a thread through the tissues from the skin, round the vessel and out again to the surface, so as to fix it to the flesh. Paré was the first also to tie a band round the limb, so as to command the bleeding during amputation. Before his time, the tape had been merely used to hold back the soft parts.

It is well that the gentleman of the household of the Prince de Rohan, whose limb was first amputated by the new method, should be immortalised. It was of him that Paré used the oft-quoted expression: "I dressed him and God healed him." Perhaps no single discovery has had so happy and wide-spread an influence on the progress of surgery. With it, a proper covering could be sought for the bone, and amputation performed in sound textures and not alone in mortified parts, and those terrible engines which had been suggested for the more rapid severance of the limb were no longer thought of.

Contemporary with Paré were Sylvius and Vesalius, or, to drop the conceit of their latinised names, Dubois (or De le Boë) and Wittings. The former taught in Paris, and the latter, though born in Brussels, professed at Padua. To them, anatomy owed much. Sylvius invented anatomical injections; and the great work of Vesalius, published when he was but twenty-nine, was the starting-point of the modern system. No stronger proof can be given of the influence of authority in these times than that, when Vesalius demonstrated the monstrous errors in human anatomy into which Galen had fallen, he was persecuted for his temerity, as men

preferred to err with Galen than be corrected by Vesalius.

In Paris, at the same time, Vidus Vidius (Guido Guidi) of Florence did much for surgery by vulgarising its study, as he taught in the vernacular. In 1572, Paré published his great work on surgery. It marked an era in the history of the science, and was adopted throughout Christendom. No man could have a higher personal and professional reputation than Paré, whose worship, as was said, was after that of God, directed to science.

Other contemporaries of Paré, were Fabricius d'Aquapendente and the "cutter" or barber-surgeon Franco. The latter lived in an obscure provincial town of France. He was a very great operator and original genius. To him we owe the lateral operation for stone, as now practised, and also the suggestion of the suprapubic operation.

Just as Hippocrates was but one of a great fellowship of gifted men, so Paré lived contemporaneously or closely preceded many great thinkers, artists, and writers on numerous subjects, which established that renaissance which seemed like a new creation of intelligence and vigour on the earth.

Copernicus, Kepler and Tycho Brahe gained immortal renown in science; Sir Thomas More, Spencer, Sir Philip Sydney and before all Bacon and Shakespear raised literature in England to the highest eminence. Abroad Rabelais, Montaigne, Ariosto, Tasso and Cervantes wrote, while Michael Angelo, Titian, Correggio, Holbein, Vasari, Tintoretto, Paul Veronese and the Caracci brought the fine arts to the highest perfection.

It is not a little remarkable how small progress surgery made during the seventeenth century. Doubtless Harvey by his great discovery made the period memorable, and by Scultetus, Saviard, Dionis, Belloste, Mareschal, Cæsar Magatus, Purmann and Wiseman, important contributions to surgical science were made, yet the entire gains of that century, so far as surgery

is concerned, fell short of the promise which the work of the previous century had given. In philosophy and science and art great strides were made,* and anatomy, on which surgery so entirely leans, was prosecuted with extraordinary enthusiasm and success during the latter half of the sixteenth and the whole of the seventeenth century. A great multitude of anatomists, all of the highest renown, then appeared. Eustachius, Fallopius, Caesalpinus, Fabricius, Asellini, Wharton, Glisson, Willis, Steno, Peyer, Rivinus, De Graaf, Van Hoorn, Malpighi, Morgagni, Ruysch, Nuck, Winslow, Albinus, and last, but not least important, Leeuwenhoek brought the microscope to aid the study. During the following century surgery came, in all her branches, to reap the fruits of these multiplied and important labours. The Royal Society in England, and, later, the Academy of Surgery in France contributed not a little to the now accelerated progress. Haller, "the father of physiology," and Hildanus in Switzerland, with Boerhaave in Holland, and Sydenham, "the modern Hippocrates," in England, aided medical science by their great talents.

Along with all this improvement there was, however, much gross quackery and ignorance. Sir Kenelm Digby, with his sympathetic powders; Crazy Sally, and others, with their unscrupulous pretensions; cancer-curers, witches, the royal touch ("Rex tangit te, Deus sanat"), fasting-girls, and a host of other impostors, flourished in the sixteenth and seventeenth centuries. An account of their doings forms one of the most curious, as it is one of the most humiliating pages in the history of our country. The ridiculous dress and manners, too, of the regular practitioners of that time did not tend to exalt the profession in the eyes of the

* Locke and Descartes, Leibnitz and Newton, Galileo and Spinoza, Milton and Dryden, Corneille and Pascal, Moliere and Jonson wrote, and Rubens, Teniers, Vandyck, Rembrandt, Murillo, Velasquez, Guercino, and Claude produced their immortal works.

public, but called forth much satire and contempt. Morel made the first attempt to produce the tourniquet, which Petit completed, and thereby added a most important item to the surgeon's armamentarium.

If my time had allowed, I would very gladly have referred to the careers of two very different men who lived in the eighteenth century, and who, though not surgeons, had a great influence on the medical opinion of their day. I refer to Cullen and Brown. The former did admirable service, and, by establishing clinical teaching in Edinburgh, contributed largely to the early celebrity of that school. The latter, though said to have originated a system, and to have much interested the speculative theorists of his day, was in reality so crazy or eccentric as to have well merited the epithet of "the Paracelsus of Scotland."

From the time of Paré, there was much activity in the medical world down to the eighteenth century; but it was in a measure without system and cohesion. Many labourers had striven to perfect special portions of the machinery; but a combining master mind was needed to give unity and consolidation to the whole. Such a man was John Hunter. In him was found that "transcendent capacity for taking trouble," which we are told constitutes genius. An extraordinary devotion to details, with a wide and clear grasp of the whole bearing and teaching to be derived therefrom, were combined in him in a remarkable degree. Born, as you know, near this city in 1728, his origin was humble and his education scanty. It is impossible for me here to enter with any detail into a record of his career, though abundant materials exist in the biographies and numerous criticisms which have appeared on his life and writings; but it is requisite for my present theme to allude shortly to the remarkable influence he exercised on surgical science. Malgaigne well describes that influence when he said that, "in the Middle Ages surgery was only a trade, Paré and Petit made it an art, but Hunter raised it to the

position of a science.”* He it was who allied anatomy, both human and comparative, to physiology and pathology, and welded them into one concrete system, and established “principles” to guide future practice. With unequalled power, he took a grasp of the whole subject, and worked out its fundamental doctrines with unique enthusiasm. He traced out and reduced to law and order the manifestations of life in every grade of creation, and showed how true practice could alone be founded on such an attentive observation of nature’s ways as he himself ever exercised. Her modes of acting are often difficult to unravel; but, with true scientific spirit, Hunter tried to seize “the idea which lay hidden beneath these shifting phenomena, and bind it in such fetters that it may increase the pleasure and profit of endless generations of men.” From Hunter’s teaching came that true spirit of investigation which has been so fruitful of good in later times. Unconsciously, men have been guided by the influence which his work created. To him, constant, arduous, and thorough work was a passion. He sacrificed sleep and pleasure, and even fortune (for he died poor, notwithstanding his lucrative practice) to accomplish his scientific projects. Fourteen thousand pathological specimens are said to have been studied and prepared by himself. His published works betray long years of thought, and it is known that Sir E. Home destroyed a whole cart-load of manuscripts; and yet all this was accomplished in a comparatively short life-time. Fergusson has well designated John Hunter’s Museum as “the heart and soul of British surgery.” He and his brother spent £170,000 on their collections; and it was through the parsimony of the Government of the day, as is now known, that we in Glasgow have inherited £100,000 worth of these unique accumu-

* And I would add the suggestive words of Sir James Paget, in his admirable Hunterian oration, which has appeared since this paper was read—“Hunter did more than any one to make us gentlemen.”

lations. John is the only man who ever gave £500 for a single skeleton. His great operation for aneurism, which established a far-reaching principle, was the result of study and meditation, and not chance; and was founded on his trust in the development of the collateral circulation, the deposit and organisation of fibrine, and the action of the absorbents. It revolutionised the whole pathology and practice regarding blood-vessels. It is now well known how nearly his early experiments failed; and how, by a curious accident, he was led to erroneous views regarding the nature of venereal disease.

William Hunter established a great school of anatomy in England; John Hunter founded the modern school of comparative anatomy and surgery; and of the many countrymen of whom we have reason to be proud, in all departments of science, there are none more worthy of a nation's regard than these brothers, and none perhaps whose work was a greater gain to humanity.

John Hunter was a pupil of Cheselden and Pott, and the master and inspirer of Abernethy, Cline, Astley Cooper, Jenner, Blizard, Carlisle, Macartney, Everard Home, and Physick; all good men and true, into whose labours we have entered. Hunter's influence will increase with time, as science advances and accurate knowledge extends. His immediate successors were placed too near him to estimate aright his great proportions. His life marks an important epoch in surgery. To us he has left an inestimable legacy, not merely in what he accomplished, but in the spirit and accuracy with which he worked.

Just before Hunter's time, anatomical schools were opened in London; but we may form a notion of how little progress was made in teaching, when we learn from him (as related by Chevalier) that he was instructed how to perform surgical operations on a dog—the only “subject” to be had. Bromfield's syllabus shows

anatomy and surgery to have been taught in thirty-eight lectures; Nicol instructed his pupils in anatomy, physiology, pathology, and midwifery in thirty-nine; and Nourse, in 1748, taught "*totam rem anatomicam complectens*" in twenty-three. Antecedent and contemporary with Hunter, there were many very able practical surgeons in London. Cheselden was a great anatomist and operator. Pott was a most polished, amiable, and accomplished man, who, beyond doubt, was the greatest practical surgeon of the day, and stood unrivalled as a clinical teacher. His writings on injuries of the head, hernia, fractures and dislocations, spinal diseases and fistula, are important and classical contributions to our literature. He did much to simplify and render less cruel the practice of surgery. In his earlier days, the actual cautery was prepared, as a matter of course, before every visit; but this, and many other such atrocities, he was able to do away with. Samuel Sharpe and Sir Cæsar Hawkins were also good practical surgeons in the metropolis in Hunter's day; but they were merely men of experience like the rest, and lacked that scientific mind and mode of working which Hunter possessed.

Hunter's teaching was most fruitful of results in English surgery, especially as regards the surgery of the vascular system. The more exact knowledge of anatomy, and the improved physiological views which arose from his instruction, gave his pupils confidence to undertake operations not before thought of. In 1796, Abernethy tied the external iliac for aneurism, and shortly afterwards Sir Astley Cooper the common carotid and the subclavian in its third part, while Colley before long ligatured the latter vessel proximal to the scalenus. In 1812, Stevens delegated the internal iliac, and Gibson of America the common iliac; while the acme of boldness was reached, in 1817, when Sir A. Cooper put a ligature on the abdominal aorta; and Mott, the following year, tied the innominate artery. All these brilliant feats followed on

Hunter's example. The pathology of the blood-vessels was, at the same time in England, greatly advanced by the labours of Jones, Lawrence, Travers, and Hodgson.

An accelerated progress has marked the last seventy-five years. Almost every department of surgery has benefited by the light reflected from the collateral branches of medical and other sciences. Our methods of investigation and means of securing accuracy have been enormously improved, and, in the multitude of "scopes," we have mechanical aids of high value. From the microscope, experimental physiology, physiological chemistry, and pathology, a flood of light has shone on almost every dark corner, and hygienic science has already begun to influence for good the entire community. In 1832, the Anatomy Act rendered legal the means of acquiring knowledge which, before then, could only be got with much risk and difficulty, and its effect on medical education has been good beyond expression.

Operative methods have been within this century vastly improved. Amputation by the various kinds of flap has been introduced and greatly perfected, but has, in not a few instances, given way to that excellent device of excision, which, having begun with White of Manchester as late as 1768, has now attained a first place in our means of removing disease. White, as is known, operated on the head of the humerus, and Park of Liverpool in 1781 on the knee, after having, by experiment on the lower animals, satisfied himself of its feasibility. The Moreaus extended the practice still further; and Dupuytren, by his excision of the lower and afterwards of the upper jaw, in 1812, showed how much could be done to save life even in the most desperate circumstances. Autoplastic operations have, since the beginning of this century, been greatly improved, as they are now founded on true anatomical and physiological principles. Orthopædic surgery, founded on the observations of Hunter

and first practised by Delpech, has been perfected in this century. The surgery of the genito-urinary organs, especially as regards the management of calculous disorder and stricture, has been much advanced. Torsion, though described by Galen and used by Avicenna, was rendered serviceable by Amussat. Herniotomy, the radical cure for rupture, staphyloraphy, the treatment of aneurism by compression, galvano-puncture, and otherwise, have all been worked out. All mechanical appliances have been simplified and rendered more efficacious. The proper and legitimate use of caustic and the electro-cautery has been in a measure defined. Iodine, galvanism, electrolysis, drainage-tubes, pneumatic aspiration, the *écraseur*, are all additions which, in our day, have been made to the appliances of the surgeon. Ovariectomy, first performed in 1809 by McDowel in America, has now reached a perfection beyond any expectation: and the security of early adhesion—that triumph of British surgery—has been rendered almost certain by modern dressings. The experiments of the early part of this century with catgut and silk-worm gut, tendon and metallic ligatures, to promote the healing of wounds, failed, but have now succeeded by more scientific employment. Of all the improvements or discoveries made, however, none can compare to anæsthetics and antiseptics, which have done more to diminish suffering and save human life than the united inventions of two thousand years. They, of themselves, will for ever render conspicuous the century in which we live. Finally, the thermometer promises to do as much for surgery as it has already achieved for medicine, and to materially increase our control over disease.

Before closing, it is requisite that I retrace the steps of my narrative somewhat to glance at the uprise of the great school of surgery in France, at the end of the last and beginning of this century, and which powerfully affected the history of our science. The old

Academy of Surgery, founded, as was already said, in 1743, had done noble work in its day, and had concentrated and given its "imprimatur" to the labours of many distinguished men. Of these, J. L. Petit and Louis were perhaps the most celebrated. Petit did much for surgery; and, if nothing more noteworthy had come from his hands than perfecting the tourniquet, which he first described in 1718, his career would be an era in surgery. Up to his time, the best means for arresting bleeding during amputation was a mere band—the fillet or bleeding tape—tied firmly or twisted up by means of a stick; but when Petit provided the tourniquet, operators could, for the first time, leisurely arrange the coverings which were requisite for securing a good stump, and ligature the vessels which were divided. This was a great advance towards that early healing which was yet, however, far off, as Hunter had still to prove its innocency and advisability.

In 1793, the Academy became extinct. It had passed into its dotage and was effete. Then medical education in France was a mere farce. The "annus medicus" was reduced to three months, with lectures twice weekly.

At that time, a great clinical teacher appeared in Paris in the person of Desault, whose extraordinary practical talents exercised an influence on the whole profession in France, and stirred the dead bones with marvellous life. He left no writings whatever, but his teaching and example established a great school. It was in the many camps scattered over Europe that we have chiefly to seek for the surgery of the early part of this century, and there it was enthusiastically cultivated, but at a terrible cost, as no fewer than six hundred medical men perished in the French armies alone in eighteen months of that fearful war. To Percy and Larrey especially we owe many lessons of wide application, learned by them in the scenes of carnage which they were called on to witness. Forced by necessity to simplify every appliance, and dispense with

all the most essential apparatus, the military surgeons carried boldness in operation to the verge of temerity, and reduced their dressings to the most primitive simplicity. By them, "water-dressing" was chiefly introduced, or at least promoted. They came to employ it almost exclusively as a substitute for camphorated spirit and oil; and the "vulneries," defensives, restrictives, etc., necessary to secure the digestion, mundification, carnification, and cicatrisation of wounds departed for ever. They eliminated setons and compresses and styptics from practice, and gave confidence in the use of the ligature, sutures, and incisions to secure drainage and relieve tension. It was on the battlefield, too, that amputation and excision were tested and improved, and the value of early operation fully recognised. The din of battle, however, was unable wholly to drown the voice of scientific discussion; and the teaching of Bichat did for the French school to some extent what Hunter accomplished for the world. Bichat died at thirty-one. He was little known at twenty-nine, and yet, before his death, he attained to undying renown. Extensive, accurate, and original works on physiology, anatomy, and pathology flowed from his pen; and he indoctrinated a host of men who, culminating in Dupuytren, made the French school famous.

Between 1814 and 1826, Boyer published the best work on general surgery which had appeared since Ambroise Paré, and many distinguished men in France wrought well to advance surgical science: Chopart, Pelletan, Sebatier, Deschamps, Dubois, Lombard, Delaporte, Ledran, Ravaton, Garengéot, Anel, Ponceau, and others in France; while in Germany, Heister, Richter, Platner, Belguer, and Callisen all occupied prominent places in surgery. Lavoisier reformed chemistry, and Laennec, working out the ideas of Avenbrugger and Corvisart, added auscultation and percussion to our means of investigation. Magendie, too, contributed greatly by his experimental physiology

to extend and give accuracy to our knowledge. My time will not allow me to do more than refer to these and to Broussais, whose doctrines threatened at that epoch to overturn the received views on medical science, but he survived their acceptance.

There cannot be a doubt that Dupuytren, whose career as surgeon to the Hôtel Dieu extended from 1808 to 1835, was the leading foreign practical surgeon of this century. Selfish, austere, and self-reliant, he concentrated in himself the renown of the French school of surgery. Five hours daily he spent in the hospital wards, and at one time he conducted courses of lectures on three different subjects. He sacrificed his constitution to his ambition. The concours by which he seized the highest place from Roux and Marjolin, and which occupied the attention of the profession in France for forty days, is still an inspiring tradition of the French school. He is said to have left a fortune of seven million *francs*. He had an unsurpassed reputation, but hardly any contributions to surgical literature, except what were collected by his admiring pupils, remain to testify to his skill and learning. Contemporaneously with or subsequently to Dupuytren, there were many very distinguished surgeons in the French school: Roux, Marjolin, Richerand, Cloquet, Delpech, Lisfranc, Sanson, Gerdy, Berard, Lallemand in the earlier time; and after them, Velpeau, Malgaigne, Blandin, Nélaton, Laugier, Vidal de Cassis, Follin, Jarjavay, Jobert, Lenoir, Morel-Lavallée. I know that some of my audience remember with pride several of the older teachers I have mentioned; I, and many more, think with gratitude on the information and guidance we received from the last-named group.

In our own country, during later years, death has been busy in our ranks. In Liston, Syme, and Ferguson, practical surgery had representatives who have never been excelled in any age or country, and it is with just pride that Scotland claims them as her sons.

I may be allowed to pay my personal homage to the memory of Sir William Fergusson, who honoured me with his friendship during my whole professional life, and for whose scientific and personal acquirements I had the deepest respect. He was beyond question the greatest practical surgeon of our time, and united, in indissoluble bonds, the "science" and the "art" of surgery. Brodie, Lawrence, Travers, Crampton, Colles, Cusack, and many more have helped to exalt the prestige of our art and the reputation of British surgery. My time will not permit any reference to the labours of these later contributors to surgical science, and it would be invidious to speak of the work of those who still remain among us ; though I may venture to say there still exist in Germany, France, and Great Britain men as highly endowed, and as able to advance the cause we all have at heart, as have appeared at any former period of history. We live in the age of "conservative" surgery, when it is the aim and ambition of surgeons to preserve and not to mutilate ; and that desirable end is to be secured by following the path which Hunter defined ; to watch nature, and to act in accordance with her dictates. The rapid communication which has been of late years established throughout the world places all members of our profession *en rapport*, and so allows them to work together for the one great end: the good of their fellow-men.

I end my task with the humiliating reflection that, from lack of time and knowledge, I have omitted much that, in such a review, demanded record ; but I submit it to you as an endeavour to trace the path by which our profession has travelled and the chief pioneers who have directed its advance.

We are the true ancients, and, though we are but in the morning of the times, we have already succeeded to a great inheritance won by the toil of a long line of noble men. Much still remains to be accomplished ; for truly we cannot say, with Alexander: "Our fathers

have left us nothing to do." Each of us, even the most humble, has the power so to employ the talent committed to him, and so to exercise the skill to which he may have attained, as that no loss may accrue to that grand art whose boast it is to have "lessened age after age the stripes wherewith humanity is stricken." So I would conclude in the words of Cicero: "Licet omnibus, licet etiam mihi, dignitatem medicæ artis tueri."

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